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ABSTRACT

This booklet is prepared annually by the Research Advisory Committee of the National Council of Teachers of Mathematics (NCTM) to advise the NCTM Board of Directors on the status of research in mathematics education. The booklet contains listings of funded projects (new and continuing); publications (conference reports and proceedings, journals, books and other resources, and electronic networks); conferences; organizations; and funding sources (government and private). (MKR)

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HIGHLIGHTS

of Research Activities in Mathematics Education

ED 387 362

1994

Research Advisory Committee
National Council of Teachers of Mathematics

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HIGHLIGHTS

of Research Activities in

Mathematics Education

1994

Research Advisory Committee
National Council of Teachers of Mathematics

The Research Advisory Committee (RAC) is a standing committee of the National Council of Teachers of Mathematics charged with:

(1) advising the NCTM Board of Directors on matters related to mathematics education research;

(2) assisting in the coordination of research-related activities in NCTM;

(3) promoting the interest of research in mathematics education.

To meet charges (2) and (3) above, RAC assumes responsibility for the peer review of proposals submitted for research reporting sessions at each Annual Meeting and assists the annual and regional program committees in identifying speakers for research interpretation or invited research sessions. Further, RAC prepares a series of Research Clips that briefly synthesize some current research on selected topics in mathematics education, often suggesting implications for classroom practice. These Clips are distributed to affiliated groups of NCTM for subsequent distribution to their constituents. In conjunction with the AERA Special Interest Group on Research in Mathematics Education, RAC organizes a Research Presession prior to each Annual Meeting of NCTM. Also, on RAC's recommendation, NCTM has formed task forces to pursue the possibilities of (a) conferences to build a research base related to the *Professional Teaching Standards*, and (b) partnerships among mathematicians, mathematics education researchers, and classroom teachers.

In fulfilling its responsibility to advise the NCTM Board of Directors on the status of research in mathematics education, RAC has prepared this tenth in an annual series of *Highlights of Research Activities in Mathematics Education*. As in past editions, we have tried to be as comprehensive in our approach as is reasonably possible, but we are certain that some important items have been inadvertently overlooked. We apologize for these omissions and ask our readers to assist us by sending information for future issues of *Highlights* to any member of RAC. We welcome your ideas and suggestions.

Susan Jo Russell (1991-1995) Chair
Technical Education Research Center

Deborah Ball (1992-95)
Michigan State University

Robert B. Davis (1991-1994)
Rutgers University

Beverly Ferruci (1992-95)
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NCTM Headquarters, Reston, VA

Miriam Leiva, Board Liaison
University of North Carolina at Charlotte

Pat Thompson (1993-1996)
San Diego State University

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University of Wisconsin—Madison

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FUNDED PROJECTS

The projects listed below primarily represent funded projects reviewed by the Research on Teaching and Learning Program of the National Science Foundation (NSF). Also included in the list are projects funded by the Social Sciences and Research Council of Canada, and private organizations, notably the McDonnell and Spencer Foundations. In addition to those listed here, projects also are funded by a number of other NSF programs and by individual provinces of Canada. Other NSF programs funding projects include Instructional Materials Development, Teacher Enhancement, Teacher Preparation, Applications of Advanced Technologies, Informal Science Education, Science and Mathematics Education Networks. Some of these projects may have significant research components. However, due to the lack of space in *Highlights*, all of these projects cannot be listed. A complete listing of all projects funded by the National Science Foundation are available upon request from the appropriate program. See the Funding Sources section of this issue of *Highlights* for complete addresses.

NEW PROJECTS

• SGER: Coming to know mathematics: A Minority perspective

Project Director: Laura Coffin Koch, University of Minnesota-Twin Cities

Agency/Period: National Science Foundation, April 1993 (12 months)

Description: This project will investigate how female and minority college students come to know mathematics, how they relate mathematics to the real world, and how students communicate about mathematics.

• SGER: National mathematics standards and educational equity

Project Director: Brett Williams and Paul Longo, American University

Agency/Period: National Science Foundation, January 1993 (12 months)

Description: This study will focus on how the NCTM Standards attempt to achieve educational equity through a prescribed restructuring of classroom communication and discourse patterns.

• U.S.-Japan cooperative research: Cross-cultural study on computer use in teaching mathematical problem solving.

Project Director: Jerry P. Becker, Southern Illinois University

Agency/Period: National Science Foundation, April 1993 (24 months)

Description: This project will study the aims of teaching mathematics, software use, curriculum development, development of open-ended mathematics problems, teacher education, and development of teaching units for cross-cultural use in classrooms.

• Mathematics discourse in Japanese and American elementary school classrooms

Project Director: James Stigler, University of California, Los Angeles

Agency/Period: National Science Foundation, May 1993 (36 months)

Description: This project will investigate how closely discourse in Japanese classrooms conform to the recommendations contained in the NCTM Professional Standards and

determine the extent to which American reform efforts might be aided by empirical descriptions of Japanese classroom discourse.

- **Research and development initiatives applied to teacher education**

  Project Director: Thomas J. Cooney and Patricia S. Wilson, University of Georgia

  Agency/Period: National Science Foundation, August 1993 (36 months)

  Description: This study will conduct research on teacher's knowledge and beliefs about the content and processes of curricular materials being developed, about ways teacher educators implement the units and the role required of them in doing so, and the nature of teachers' experiences as they leave their preservice program to begin their careers as mathematics teachers.

- **Mathematics for tomorrow**

  Project Director: Barbara S. Nelson, Education Development Center

  Agency/Period: National Science Foundation, May 1993 (48 months)

  Description: This study will explore ways to shift teachers' beliefs about the nature of teaching and learning mathematics, attempt to deepen and broaden the teachers' knowledge of mathematics, and introduce fundamentally new instructional practices into the classroom.

- **SGER: Affective aspects of teachers: Transforming their mathematics practice**

  Project Director: Lynn Goldsmith, Education Development Center

  Agency/Period: National Science Foundation, September 1993 (12 months)

  Description: This study will investigate the role of affect in the process of teacher development in mathematics instruction using case study methodology to explore how it feels for teachers to undertake to change their mathematics practices and how teachers' affective states influence the process itself.

- **National Science Foundation Young Investigator Award**

  Project Director: Randolph A. Philipp, San Diego State University

  Agency/Period: National Science Foundation, May 1993 (60 months)

  Description: This study will investigate the relationship between preservice teachers' mathematics content knowledge, their pedagogical content knowledge, their conceptions of mathematics, and their understanding of students' mathematical thinking at different points during their teacher preparation.

- **Invited foundational papers on research in undergraduate mathematics education**

  Project Director: Ronald C. Rosier and James J. Kaput, Conference Board of the Mathematical Sciences

  Agency/Period: National Science Foundation, August 1993 (24 months)

  Description: This project provides support for researchers in mathematics education to write foundational papers to be included in a new Conference board of the Mathematical

Science series RESEARCH IN COLLEGIATE MATHEMATICS EDUCATION.

- **Teaching to the big ideas**

  Project Director: Deborah Schifter and Susan Jo Russell, Education Development Center

  Agency/Period: National Science Foundation, August 1993 (48 months)

  Description: This project will study how a teacher enhancement strategy that has teachers focus on identifying and exploring the underlying organizing principles (the "big ideas") that their students must wrestle with as their understanding of mathematics grows helps teachers improve their practice.

CONTINUING PROJECTS

- **A study of classroom discourse as mediator of beliefs and understanding in middle school mathematics**

  Project Director: Steven R. Williams, Washington State University, Pullman, WA 99164

  Agency/Period: National Science Foundation, August 1991 (24 months)

- **Action research: Purposes, practices, possibilities—Creating links to national science and mathematics education reform**

  Project Director: Molly Lynn Watt, Education Development Center, Newton, MA 02160

  Agency/Period: National Science Foundation, June 1992 (12 months)

- **Alternative performance assessment systems: An evaluation of cost, technical quality, feasibility, and acceptability**

  Project Director: Stephen P. Klein, Rand Corporation, Santa Monica, CA 90406

  Agency/Period: National Science Foundation, December 1991 (36 months)

- **Authentic assessment for multiple users**

  Project Director: Margaret Jorgensen, Educational Testing Service, Princeton, NJ 08541

  Agency/Period: National Science Foundation, December 1991 (36 months)

- **Authentic assessment for multiple users**

  Project Director: Margaret Jorgensen, Educational Testing Service, Princeton, NJ 08541

  Agency/Period: National Science Foundation, December 1991 (36 months)

- **Balanced assessment for the mathematics curriculum**

  Project Director: Alan Schoenfeld, Graduate School of Education, University of California, University of California, Berkeley, CA 94720

  Agency/Period: National Science Foundation, July 1992 (36 months)

- **Case studies of the introduction and use of portfolio assessment in pre-college mathematics education**

  Project Director: Heather McCollum, Policy Studies Associates, Inc., Washington, DC 20009

  Agency/Period: National Science Foundation, December 1991 (36 months)

- **Case studies of the introduction and use of portfolio assessment in pre-college mathematics education**

  Project Director: Heather McCollum, Policy Studies Associates, Inc., Washington, DC 20009

  Agency/Period: National Science Foundation, December 1991 (36 months)

- **Communication in and about school mathematics**

  Project Director: Deborah Ball and Magdalene Lampert, Michigan State University, East Lansing, MI 48824

  Agency/Period: National Science Foundation, September 1992 (36 months)

- **Design as an introduction to computer science in high school**

  Project Director: Judith E. Sims-Knight, University of Massachusetts at North Dartmouth, North Dartmouth, MA 02747

  Agency/Period: National Science Foundation, November 1991 (24 months)

- **Empowering mathematics teachers in computer-intensive environments**

  Project Director: M. Kathleen Heid, Pennsylvania State University, University Park, PA 16802

  Agency/Period: National Science Foundation, February 1992 (36 months)

- **Enhancing teacher professionalism through collaborative curriculum development in mathematics**

  Project Directors: Thomas L. Good, Mary McCaslin, and Barbara J. Reys, Center for Research in Social Behavior, University of Missouri, Columbia, MO 65211

  Agency Period: National Science Foundation, September 1989 (48 months)

- **Fractional schemes: A product of social interaction and cognitive education**

  Project Director: Adalira Saenz-Ludlow, Purdue University, West Lafayette, IN 47904

  Agency/Period: National Science Foundation, January 1993 (36 months)

- **Improving the mathematical understanding of minority students**

  Project Directors: Patricia F. Campbell, University of Maryland, College Park, MD 20742; Thomas E. Rowan, Montgomery County Public Schools, MD

  Agency/Period: National Science Foundation, September 1989 (52 months)

- **Instructional approaches for algebra word problem solving**

  Project Directors: Mitchell Nathan with Lauren B. Resnick, LRDC, University of Pittsburgh, Pittsburgh, PA 15260

  Agency/Period: James S. McDonnell Foundation, September 1991 (24 months)

- **Investigating using models and simulations for learning**

  Project Director: Nancy Roberts, Lesley College, Cambridge, MA 02138 and John Richards, BBN, Cambridge, MA 02138

  Agency/Period: National Science Foundation, February 1992 (24 months)

- **Investigations in number, data, and space: An elementary mathematics curriculum**

  Project Director: Susan J. Russell, Technical Education Research Center, Inc., Cambridge, MA 02140 (Supplement to James J. Kaput, Southeastern Massachusetts University)

  Agency/Period: National Science Foundation, September 1991 (12 months)

- **Investigations into a recursive theory of mathematical understanding**

  Project Director: Thomas Kieren, Department of Secondary Education, University of Alberta, Edmonton, Alberta T6G 2G5 Canada

  Agency/Period: Social Sciences and Humanities Research Council of Canada, September 1990 (36 months)

- **Invitations to thinking II: Designs for generative learning**

  Project Director: Cognition and Technology Group, Learning Technology Center, Vanderbilt University, Nashville, TN 37420

  Agency/Period: James S. McDonnell Foundation, February 1991 (36 months)

- **Learning abstract algebra: A research based laboratory and cooperative learning approach**

  Project Director: Edward L. Dubinsky, Purdue University, West Lafayette, IN 47907

  Agency/Period: National Science Foundation, December 1991 (36 months)

- **Learning abstract algebra: A research-based laboratory and cooperative learning approach**

  Project Director: Edward L. Dubinsky, Purdue University, West Lafayette, IN 47907

  Agency/Period: National Science Foundation, December 1991 (36 months)

- **Longitudinal analysis of cognitively guided instruction in the primary grades**

  Project Directors: Elizabeth Fennema and Thomas P. Carpenter, University of Wisconsin, Madison, WI 53706

  Agency/Period: National Science Foundation, May 1990 (48 months)

- **Longitudinal study of children's development of mathematical knowledge**

  Project Directors: Robert B. Davis and Carolyn A. Maher, Rutgers University, New Brunswick, NJ 08903

  Agency/Period: National Science Foundation, August 1991 (42 months)

- **Math Tools for Teachers in Grades 4-6**

  Project Directors: Sheila Sconlers, Department of Education, and Paul Sally, Department of Mathematics, University of Chicago, Chicago, IL 60637

  Agency/Period: National Science Foundation, September 1990 (36 months)

- **Mathematical sciences: Presidential young investigator award**

  Project Director: Erna Yackel, Department of Mathematical Sciences, Purdue University-Calumet, Hammond, IN 46323

  Agency/Period: National Science Foundation, September 1989 (60 months)

- **Mathematics in a literary mode: Toward a poetics of pedagogy**

  Project Director: Daiyo Sawada, University of Alberta

  Agency/Period: Social Science and Humanities, Research Council of Canada, 1991 (36 months)

- **NCTM standards research catalyst conference**

  Project Directors: Patricia F. Campbell and Marilyn L. Hala, National Council of Teachers of Mathematics, Reston, VA 22091

  Agency/Period: National Science Foundation, August 1991 (24 months)

- **Niveaux de compréhensioin du processus de simulation de phénomènes aléatoires. (Levels of comprehension of the processes of Boesimulation of aleatory phenomena)**

  Project Director: Claude Gaulin, Département de Didactique, Université Laval, Québec, Québec G1K 7P4

  Agency/Period: Social Sciences and Humanities Research Council of Canada, September 1990 (36 months)

- **Persistence in science of high-ability minority students, Phase V: Comprehensive data analysis**

  Project Director: Jerilee Grandy, Educational Testing Service, Princeton, NJ 08541

  Agency/Period: National Science Foundation, September 1992 (14 months)

- **Portfolio in practice: Integrating assessment and instruction in elementary mathematics**

  Project Director: Maryl Gearhart, University of California Los Angeles, Los Angeles, CA 90024

  Agency/Period: National Science Foundation, December 1991 (42 months)

- **Portfolio in practice: Integrating assessment and instruction in elementary mathematics**

  Project Director: Maryl Gearhart, University of California–Los Angeles, Los Angeles, CA 90024

  Agency/Period: National Science Foundation, December 1991 (36 months)

- **Practices of teaching and learning authentic mathematics for understanding in school**

  Project Director: Magdalene Lampert, Department of Teacher Education, Michigan State University, East Lansing, MI 48824

  Agency/Period: Spencer Foundation, October 1991 (36 months)

- **Problem-posing instruction for teachers: Its impact on student success in problem solving**

  Project Director: Nancy Gonzales, University of New Mexico, Albuquerque, NM 87131

  Agency/Period: National Science Foundation, June 1992 (12 months)

- **Quantitative concepts as a foundation for algebra**

  Project Directors: P. Thompson and A. Thompson, San Diego State University, San Diego, CA

  Agency/Period: National Science Foundation, September 1989 (48 months)

- **Quantitative understanding: Amplifying student achievement and reasoning (QUASAR)**

  Project Director: Edward A. Silver, University of Pittsburgh, Pittsburgh, PA 15260

  Agency/Period: Ford Foundation, 1989 (60 months)

- **Research and development of a problem centered mathematics program**

  Project Director: Erna Yackel, Department of Mathematical Sciences, Purdue University-Calumet, Hammond, IN 46323

  Agency/Period: James S. McDonnell Foundation, November 1990 (60 months)

- **Research explorations by classroom teachers**

  Project Director: Michael J. Shaughnessy and Linda Foreman, The Math Learning Center, Portland, OR 97302

  Agency/Period: National Science Foundation, January 1992 (18 months)

- **Setting a research and planning agenda for computer modeling in the precollege curriculum**

  Project Director: Nancy Roberts, Lesley College, Cambridge, MA 02138 and John Richards, BBN, Cambridge, MA 02138

  Agency/Period: National Science Foundation, September 1992 (24 months)

- **Social and metacognitive influences on strategy use in first grade children**

  Project Director: Martha Carr, University of Georgia, Athens, GA 30602

  Agency/Period: National Science Foundation, September 1992 (24 months)

- **Splitting, similarity, and rate of change: New approaches to multiplication and exponential functions**

  Project Director: Jere Confrey, Cornell University, Ithaca, NY 14853

  Agency/Period: National Science Foundation, April 1991 (48 months)

- **Students' conceptions of the mathematics of change and variation**

  Project Director: Benjamin R. Nemirovsky, TERC, Cambridge, MA 02140

  Agency/Period: National Science Foundation, September 1992 (48 months)

- **Teachers' learning from reform: The case of mathematics instruction in California**

  Project Director: Penelope L. Peterson, David K. Cohen, Susanne Wilson, and Deborah Ball, Michigan State University, East Lansing, MI 48824

  Agency/Period: National Science Foundation, December 1991 (48 months)

- **Teachers' learning from reform: The case of mathematics instruction in California**

  Project Directors: Penelope Peterson, David K. Cohen, Suzanne Wilson, and Deborah Ball, Michigan State University, East Lansing, MI 48824

Agency/Period: National Science Foundation, December 1991 (48 months)

- **Teaching number sense: Providing the general conceptual prerequisites for school success to students at risk for school failure**

  Project Directors: Sharon Griffin, Clark University, Worcester, MA 01610; Robbie Case, Center for Education Research, Stanford University, Stanford, CA 94305

  Agency/Period: James S. McDonnell Foundation, September 1991 (36 months)

- **The classroom as learning environment for teachers and students**

  Project Director: Patricia Tinto and Sandra Trento, Syracuse University, Syracuse, NY 13244

  Agency/Period: National Science Foundation, September 1992 (12 months)

- **The effects of problem-based instruction on the geometric knowledge of high school students**

  Project Director: Gary W. Martin, University of Hawaii at Manoa, Honolulu, HI 96822

  Agency/Period: National Science Foundation, August 1991 (36 months)

- **The influence of experience on spatial problem-solving skills among Navajo children**

  Project Director: Mary Gauvain, Scripps College, Claremont, CA 91711

  Agency/Period: The Spencer Foundation, January 1991

- **Visual and interactive modes of integrated learning of science and mathematics**

  Project Director: H. Eugene Stanley, Boston University, Boston, MA 02215

  Agency/Period: National Science Foundation, April 1991 (60 months)

- **Young children's intuitions about fractions**

  Project Directors: Amy Kohn with Lauren B. Resnick, LRDC, University of Pittsburgh, Pittsburgh, PA 15260

  Agency/Period: James S. McDonnell Foundation, September 1991 (24 months)

PUBLICATIONS

CONFERENCE REPORTS AND PROCEEDINGS

International Group for the Psychology of Mathematics Education (PME) (July, 1993). *Proceedings of the Seventeenth International Conference*. Ichiei Hirabayashi, Nobuhiko Nohda, Keiichi Shigematsu, & Fou-Lai Lin, Eds. Tsukuba, Ibaraki, Japan: University of Tsukuba.

North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA). *Proceedings of the Fifteenth Annual Meeting*. Asilomar, California, October, 1993. Joanne Becker Rossi & Barbara J. Pence, Eds. San Jose, CA: Center for Mathematics and Computer Science, San Jose State University.

Mathematics Education Research Group of Australasia (MERGA). *Proceedings of the Sixteenth Annual Conference*, Brisbane, Australia, July 1993. Bill Atweh, Clive Kanes, Marjorie Carss, and George Booker, Eds. Queensland University of Technology, Kelvin Grove Campus, Australia

Algebra for the Twenty-first Century. Proceedings of the August 1992 Conference. Reston, VA: National Council of Teachers of Mathematics.

Charting Directions for Research in Collegiate Mathematics Education. A Conference Report. (July, 1993) James R. C. Leitzel, Ed. Washington, DC: The Mathematical Association of America.

A Time for Questions: The Future of Integration and Tech Prep. Report of a conference on the integration of academic and vocational education, which has important implications for mathematics education. (June, 1993). Carol Ascher & Erwin Flaxman, Eds. New York: Institute on Education and the Economy, Teachers College, Columbia University.

JOURNALS

Cognition and Instruction. Published 4 times per year by Lawrence Erlbaum Associates, 365 Broadway, Hillsdale, NJ 07642. For individuals, the subscription fee is $72 per year.

Educational Studies in Mathematics. Published 6 times per year by Kluwer Academic Publishers, P. O. Box 358, Accord Station, Hingham, MA 02018-0358. For individuals, the subscription fee is $152 per year. For institutions, the subscription fee is $332.00 per year.

Focus on Learning Problems in Mathematics. Published 4 times per year by the Center for Teaching/Learning of Mathematics, P. O. Box 3149, Framingham, MA 01701. For individuals, the subscription rate is $25 per year.

For the Learning of Mathematics. Published 3 times per year by the FLM Publishing Association, 206-1273 Merklin Street, White Rock, B. C., Canada V4B 4B8. For individuals, the subscription fee is $24 per year.

Journal of Educational Computing Research. Published 4 times per year, by Baywood Publishing Co., 26 Austin Ave., P. O. Box 337, Amityville, NY 11701. For individuals, the subscription fee is $95 per year, plus $9.00 Shipping and Handling.

The Journal of Mathematical Behavior. Published 4 times per year by Ablex Publishing Corporation, 355 Chestnut Street, Norwood, NJ 07648. For individuals, the subscription fee is $45 per year.

Journal for Research in Mathematics Education. Published 5 times per year by the National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 22091-1593. An individual NCTM membership with a *JRME* subscription is $45 per year. The sucbscription price for non-members is $30 per year.

Journal of Science, Education, & Technology. Published 4 times per year by Plenum Publishing Corporation, 233 Spring Street, New York, NY 10013. For individuals, the subscription fee is $50 per year.

Journal of Research in Science Teaching. Published 10 times per year by John Wiley & Sons, Inc. For individuals, the subscription fee is $295 per year. Despite its title, this journal deals also with mathematics education.

UME Trends - News and Reports on Undergraduate Mathematics Education. Published 6 times per year by the Mathematical Association of America, 1529 Eighteenth Street, N. W., Washington, DC 20036. For individuals, the subscription fee is $16 per year ($24 outside the USA).

BOOKS AND OTHER RESOURCES

Harel, G., & Confrey, J. (Eds.). (1994). *The development of multiplicative reasoning in the learning of mathematics*. Albany, NY: SUNY Press.

Hawkins, William A., & Fasanelli, Florence, Eds. (undated) *Directory of Mathematics-based Intervention Projects: Strengthening Underrepresented Minority Mathematics Achievement*. Washington, DC: Mathematical Association of America.

Jetter, Alexis (1993). *We Shall Overcome, This Time with Algebra*. New York Times Sunday Magazine, February 21, 1993.

Lesh, Richard, and Lamon, Susan J., Eds. (1992). *Assessment of Authentic Performance in School Mathematics*. Washington, DC: American Association for the Advancement of Science.

NCTM (1993). *Assessment Standards for School Mathematics. Working Draft*. Reston, VA: Author.

Niss, Mogens, Ed. (1993). *Investigations into Assessment in Mathematics Education*. Dordrecht, Holland: Kluwer.

Nunes, Terezinha, Schliemann, Analucia, & Carraher, David (1993). *Street Mathematics and School Mathematics*. Cambridge, England: Cambridge University Press.

Office of Educatioal Research and Improvement (undated). *Promising Practices in Mathematics and Science Education*. Available from Regional Educational Laboratories, U. S. Department of Education.

Stake, Robert, et al. (1993). *Teacher Preparation Archives: Case Studies of NSF-Funded Middle School Science and Mathematics Teacher Preparation Projects*. Urbana, IL: CIRCE, University of Illinois.

Steffe, L. P. (Ed.). (1991). *Epistemological foundations of mathematical experience*. New York: Springer-Verlag.

U. S. Department of Education (1994). *Mathematics, Science & Technology Education Programs that Work*. Washington, DC: OERI.

von Glasersfeld, Ernst, Ed. (1991). *Radical Constructivism in Mathematics Education*. Dordrecht, Holland: Kluwer.

White, Alvin, Ed. (1993). *Essays in Humanistic Mathematics*. Washington, DC: Mathematical Association of America.

Zaslavsky, C. (1994). *Fear of Math: How to get over it and get on with your life!* New Brunswick NJ: Rutgers University Press.

ELECTRONIC R&D NETWORKS

Some mathematics education researchers now use computers and modems to share ideas electronically. A particularly important network - officially called an Electronic Collaborative Community - is the Algebra Working Group (which defines "algebra" rather broadly), sponsored by the National Center for Research in Mathematical Sciences Education, under the leadership of James Kaput. Interested researchers may request access by sending an e-mail request to: jkaput@umassd.edu

There is a network dealing with the teaching and learning of geometry, known as Geometers' Forum, under the leadership of Eugene Klotz, Mathematics Department, Swarthmore College, Swarthmore, PA 19081, which can be reached through: forum@cs.swarthmore.edu

At a more general level, there is a network dealing with the educational uses of technology that deals extensively with mathematics, under the leadership of Arthur Melmed at: amelmed@gmuvax2.gmu.edu

Professor Chi-Han Sah, at SUNY Stony Brook, has established a file for mathematicians who are interested in educational questions and educational research. You may request membership by sending an e-mail note to: sah@math.sunysb.edu. In early 1994 the discussion of this e-mail file has focused on the advantages and disadvantages of students working in groups, on whether "algebra" is for all students (and what, exactly, "algebra" ought to include), and on the implications of the NCTM *Standards* reports.

CONFERENCES

Conference on Practitioner-Led Inquiry

18-20 March, 1994, Washington, D.C.

The purposes of this conference are (a) to examine current practice in teacher-led inquiry and its contributions to improved teaching and student learning; (b) to indentify barriers and conditions needed to advance the practice of teacher-led inquiry; and (c) to formulate guidance for improved policy and practice to promote practitioner inquiry as a part of school reform. Conference products include proceedings and a videotape of conference activity. For further information, contact Dr. Joyce Murphy, U.S. Department of Education, Office of Research, (202) 219-2039.

The Art and Craft of Reform of Undergraduate Science and Mathematics

16-18 June, 1994, Worcester, MA

At this working conference, faculty teams are challenged to develop strategies to revitalize undergraduate science and mathematics. Participants are charged with addressing questions of institutional reform. The conference is sponsored by Project Kaleidoscope. For additional information, contact Jeanne L. Narum, 1730 Rhode Island Avenue, N.W., Suite 1205, Washington DC, 20036, (202) 232-1300.

Institute on Multidisciplinary Foundations of Cognitive Science

5-20 July, 1994, Buffalo, NY

The purpose of this conference is to explore the epistemological underpinnings of cognitive science. For further information, contact William J. Rapaport, SUNY, Buffalo, Department of Computer Science, e-mail cogsci@ubums.cc.buffalo.edu .

ORGANIZATIONS

National Council of Teachers of Mathematics (NCTM)

President: Jack Price (1994-96), California State Polytechnic University

Past President: (1994-95) Mary M. Lindquist, Columbus College

NCTM holds its Annual Meeting in April. Regional meetings are also scheduled in the spring and fall of each year, at various sites across the United States and Canada. Research sessions sponsored at these meetings include reports of research and implications of research. Prior to each annual meeting at NCTM there is a full-day Research Presession organized by the NCTM Research Advisory Committee and the AERA Special Interest Group on Research in Mathematics Education. Also at this time the Association of State Supervisors of Mathematics and the National Council of Supervisors of Mathematics participate in a joint research session.

NCTM has scheduled its Annual Meeting in Indianapolis 13-16 April 1994, and in Boston 6-9 April 1995. The annual dues of $45 entitle members to a subscription to the NCTM NEWS BULLETIN and either the ARITHMETIC TEACHER, THE MATHEMATICS TEACHER, or THE JOURNAL FOR RESEARCH IN MATHEMATICS EDUCATION, a 20% discount on an extensive list of publications, and reduced conference registration fees. Membership information can be obtained from the NCTM Headquarters Office, 1906 Association Drive, Reston, VA 22091.

Deadlines: 1 May 1994 - proposals for research reporting

1 September 1994 - symposium proposals for the Research Presession in Seattle

Guidelines for proposals are published in the January issue of the JOURNAL FOR RESEARCH IN MATHEMATICS EDUCATION, and the fall newsletter of SIG/RME.

AERA Special Interest Group/Research in Mathematics Education (SIG/RME)

Co-chairs: Thomas J. Cooney (1992-94), University of Georgia

Sigrid Wagner (1993-1995), The Ohio State University

As one of the Special Interest Groups in AERA, SIG/RME is allocated a number of program slots at the AERA Annual Meeting. The SIG coordinates the peer review of proposals submitted for these sessions and also sponsors an invited speaker from outside the mathematics education community.

The SIG/RME also works with the NCTM Research Advisory Committee to organize the Research Presession held prior to each annual meeting of NCTM. The SIG/RME is responsible for the final organization and scheduling of sessions and for sponsoring the keynote speaker.

Members of the SIG/RME receive 4 newsletters per year, a membership directory, a copy of the invited addresses at AERA and the Research Presession, and a copy of the HIGHLIGHTS. Annual membership dues are fifteen dollars ($11.00 graduate students). Membership forms may be requested from Lynn Hart, Atlanta Math Project, Georgia State University, Atlanta GA 30303.

Paper and symposium proposals for the 1995 AERA annual meeting are due approximately August 1994. See the May 1994 issue of EDUCATIONAL RESEARCHER for exact deadlines and guidelines.

American Association for the Advancement of Science (AAAS)

President: Eloise Clark (1993-94), Bowling Green State University

The individual membership of AAAS mirrors the widening reach of the scientific and engineering enterprise. It includes many people who have achieved distinction both in North America and abroad for work at the leading edges of all fields of science and technology. Individual members are mainly research scientists, but many teachers and nonscientists are represented in the work and activities of the Association.

Members receive the weekly journal SCIENCE and may purchase AAAS publications and audio tapes and register for the AAAS Annual Meeting at a discount. The 1994 meeting will be held 16-20 February in Atlanta.

Full membership is $92.00 a year, full-time students pay $50.00 a year. For membership information write the Membership Department of AAAS, 1333 H Street NW, Washington DC 20005.

American Mathematical Association of Two Year Colleges (AMATYC)

President: Marilyn Mays (1993-95), North Lake College, Irving, TX

President Elect: Wanda Gardner (1993-95), Cabrillo College, Aptos, CA

AMATYC holds its annual meetings in November of each year. In 1994 it will be held 3-6 November in Tulsa.

Membership dues of $50.00 per year include the AMATYC REVIEW and the AMATYC NEWS. Membership information can be obtained through the AMATYC Office, State Technical Institute at Memphis, 5983 Macon Cove, Memphis, TN 38134

American Mathematical Society (AMS)

President: Ronald L. Graham (1993-95), AT&T Bell Laboratories, Murray Hill, NJ

The Annual Meeting of AMS is held each January. In 1994 the MAA-AMS Joint Mathematics Meeting was held 12-15 January in Cincinnati. The 1995 meeting will be held 4-7 January in San Francisco.

Membership dues range from $84.00 to $112.00 dependent upon professional income. AMS also offers a student rate as well as an unemployed rate. Both are $280.00 Members receive NOTICES, a news bulletin, and BULLETIN, a journal. For membership information write to the AMS Headquarters Membership Department, PO Box 6248, Providence RI 02940-6248.

International Organization of Women and Mathematics Education (IOWME)

Convenor: Christine Keitel-Kreit, Technischel Universitat Berlin, Berlin Germany

USA Coordinator: Joanne Rossi Becker, Department of Mathematics and Computer Science, San Jose State University, San Jose CA 95152

IOWME seeks to encourage, facilitate, and promote recognition and participation of persons who are interested and involved in activities and issues of particular significance to women in mathematics education around the world. IOWME was founded at ICME III in Karlsruhe. The next meeting will be held in 1996 in conjunction with ICME VIII in Seville, Spain. The organization has established a network of national coordinators and publishes a semiannual newsletter. Submissions for the newsletter and requests for information should be sent to Joanne Rossi Becker, San Jose State University, San Jose CA 95152.

International Study Group for Research on Learning Probability and Statistics

Coordinator: Joan Garfield, University of Minnesota

This is an informal network of researchers from many countries who share a common interest in research on teaching and learning statistics at all age levels.

The meetings of the Study Group are held in conjunction with the International Conference on Teaching Statistics which is held every four years. The next conference will be 25-30 July 1994 in Marrakesh Morocco.

Requests to receive the newsletter, published three times a year, should be sent to Joan Garfield, University of Minnesota, 140 Appleby Hall, 128 Pleasant Street SE, Minneapolis MN 55455. e-mail: jbg@vx.cis.umn.edu.

International Study Group on Ethnomathematics (ISGEm)

President: Gloria F. Gilmer, Math Tech, Inc. Milwaukee, WI

The International Study Group on Ethnomathematics (ISGEm) was formed in 1985. The Group publishes a semiannual newsletter and has created four Special Interest Groups (SIGS) to synthesize relevant research in ethnomathematics over the next few years. These groups, their coordinators, and institutional affiliations are (1) Research in Culturally Diverse Environments, Luis Ortiz Franco, Chapman University, CA; (2) Curriculum and Classroom Applications, Lawrence Shirley, Towson State University; (3) Out of State Applications, Sunday Ajose, East Carolina University; and (4) Theoretical Perspectives, Ubiratan D'Ambrosio, Universidade Estadual de Campinas SP Brazil. Persons interested in receiving the semiannual newsletter should send $10.00 to Anna Grosgalvis, 3830 Humboldt Boulevard, Milwaukee, WI 53212.

Mathematical Association of America (MAA)

President: Donald L. Kreider (1993-95), Dartmouth College

The membership of the Mathematical Association of America includes persons interested in the ever-expanding field of mathematics. Individuals who teach in colleges, universities, community colleges and high schools, as well as persons who work in the private sector, are members.

The 1995 Annual Meeting will be held 4-7 January in San Francisco. The Summer Meeting will be held August 1995 at the University of Vermont in Burlington.

Membership dues are discounted for the first two years for new members. They are: AMERICAN MATHEMATICAL MONTHLY - $74.00, MATHEMATICS MAGAZINE -$59.00, COLLEGE MATHEMATICS - $62.00, and all three - $107.00. After two years each increases approximately $15.00.

For information write MAA Membership Department, 1529 Eighteenth Street NW, Washington DC 20036.

Psychology of Mathematics Education (PME and PME-NA)

President of PME: Carolyn Kieran (1992-95), University of Quebec at Montreal, Canada

President of PME-NA: David Kirshner (1993-94), Louisiana State University

PME holds its annual international conference in July or early August. The 18th PME will be held at the University of Lisbon, Portugal, from 29 July to 3 August 1994. For more information, contact Joao Filipe Matos, e-mail: ejfm@scosysv.fc.ul.pt

The next meeting of the North American chapter of PME (PME-NA) will be held at Louisiana State University, Baton Rouge, from 5-8 November 1994. Contact David Kirshner, e-mail: cikirs@lsuvm.sncc.lsu.edu

Payment of combined PME and PME-NA annual dues ($50) can be sent to Barbara Pence, PME-NA treasurer, San Jose State University, Department of Mathematics and Computer Science, San Jose CA 95192-0103.

Research Council for Diagnostic and Prescriptive Mathematics (RCDPM)

President: Martin L. Johnson (1993-95), University of Maryland

RCDPM has an annual meeting in February. The 1994 meeting was held in Fort Worth, Texas. The 1995 meeting will be held in Las Vegas, Nevada.

A list of publications is available in ERIC. The $28 annual membership dues include a subscription to FOCUS ON LEARNING PROBLEMS IN MATHEMATICS, the official RCDPM journal, and quarterly issues of the RCDPM newsletter. For membership information, contact George Wyer, 94 Jerry Daniels Road, Marlborough CT 06447-1230.

School Science and Mathematics Association (SSMA)

President: Jerry P. Becker (1992-94), Southern Illinois University at Carbondale

SSMA holds its annual meeting in the fall. It will be held at California State University-Fresno October 14-16 1994: contact Carol Fry Bohlin (209) 278-6530. Membership dues are $30 per year - $12.50 student (USA) and $35 per year - $17.50 student (foreign). Membership includes subscription to the eight issues of SCHOOL SCIENCE AND MATHEMATICS and quarterly issues of SSMArrt newsletter. SSMA has established a network for integrated science and mathematics teaching and learning and publishes monograph series in Classroom Activities and Topics for Teachers. For membership information, write to Don Pratt, Executive Secretary, SSMA, Department of Curriculum and Foundations, Bloomsburg University, Bloomsburg PA 17815 or call (717) 389-4639.

Society for Industrial and Applied Mathematics (SIAM)

President: Avner Friedman (1993-94), University of Minnesota

SIAM will hold its annual meeting 25-29 July 1994 in San Diego. Membership dues of $85.00 per year include a subscription to the SIAM REVIEW journal and the SIAM NEWS newsjournal. For membership information write the SIAM Membership Department, 3600 University City Science Center, Philadelphia PA 19104-2688.

Women and Mathematics Education (WME)

President: Joan Ferrini-Mundy, University of New Hampshire

President-Elect: Dorothy Buerk, Ithaca College

WME was formed to promote the mathematics education of girls and women. We welcome short articles concerning gender equity for our newsletter. A WME program is presented on Friday at the annual NCTM meeting. Persons interested in joining, receiving newsletters, and a resource bibliography should send $10.00 ($5.00 for students, retired, and unemployed) to: WME, c/o Summer Math, Mount Holyoke College, 302 Shattuck Hall, South Hadley, MA 01075.

SELECTED EDUCATIONAL RESEARCH AND DEVELOPMENT CENTERS: U.S. DEPARTMENT OF EDUCATION

National Research Center on Student Learning
Co-Directors: Robert Glaser, Lauren Resnick, and James Voss
University of Pittsburgh
Learning Research & Development Center
3939 O'Hara Street
Pittsburgh, PA 15260
412-624-7450

National Center for Research in Mathematical Sciences Education
Director: Thomas Romberg
University of Wisconsin at Madison
Wisconsin Center for Education Research
1025 West Johnson Street
Madison, WI 53706
608-263-4285

Center for Technology in Education
Director: Jan Hawkins
Bank Street College of Education
610 West 112th Street
New York, NY 10025
212-875-4400

National Center of Adult Literacy
Director: Daniel Wagner
University of Pennsylvania
Graduate School of Education
3910 Chestnut Street
Philadelphia, PA 19104-3111
215-898-2100

National Research Center on Assessment, Evaluation, and Testing
Co-Directors: Eva Baker, Robert Linn
University of California at Los Angeles
Center for the Study of Evaluation
10880 Wilshire Boulevard Suite 700
Los Angeles, CA 90024-1522
310-206-1532

National Center for Research on Teacher Learning
Director: G. Williamson McDiarmid and Robert Floden
Michigan State University
College of Education
116 Erickson Hall
East Lansing, MI 48824-1034
517-355-9302

Center for Research on Effective Schooling for Disadvantaged Students
Director: James McPartland
Johns Hopkins University
3505 North Charles Street
Baltimore, MD 21218
410-516-0370

FUNDING SOURCES

GOVERNMENT AGENCIES

NATIONAL SCIENCE FOUNDATION†
4201 Wilson, Blvd
Arlington, VA 22230

Directorate for Education and Human Resources (EHR)
Luther Williams, Assistant Director

Division of Elementary, Secondary, and Informal Education (ESIE)
Margaret B. Cozzens , Director 703-306-6800 6800
Jean E. Vanski , Deputy Director 703-306-1620 6801

Teacher Enhancement and Development Programs (Teacher Unit)
Joseph V. Stewart, Director 703-306-1613 6824

Teacher Enhancement Program
Peter G. Braunfeld 703-306-1613 6834
Donald E. Jones 703-306-1613 6819
Wayne Sukow 703-306-1613 6818

Associate Program Directors
Henry Kepner 703-306-1613 6835
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Joyce B. Evans 703-306-1613 6826

Curriculum Development Program (Curriculum Unit)
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Instructional Materials Development Program
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Presidential Awards for Excellence in Science and Mathematics Teaching
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Students, Parents, and Public Education Programs
Hyman Field 703-306-1616 6817

Young Scholars Program
Julia V. Clark 703-306-1616 6811
Rudolfo Tamez 703-306-1616 6813

Informal Science Education Program
Barbara H. Butler 703-306-1616 6812
Roger D. Mitchell 703-306-1614 6842

Division of Human Resource Development (DHRD)
Roosevelt Calbert, Director 703-306-1640

Division of Research, Evaluation, and Dissemination (DRED)
Daryl E. Chuvin, Director 703-306-1650
Larry E. Suter, Assistant Director 703-306-1640

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† NSF E-mail addresses can be constructed by concatenating a person's first initial and last name, followed by "@NSF.GOV." Also, NSF documents and publications are available over Internet via e-mail or Internet utilities such as Gopher. Send queries to stis@nsf.gov for further information.

Applications of Advanced Technologies Program
Nora Sabelli, Andrew Mornaw 703/306-1651

Dissemination and Evaluation
Larry Suter 703/306-1650

Research in Teaching and Learning Program
Richard Lesh, Barbara Lovitts 703/306-1652

Division of Undergraduate Education (DUE)
Robert Watson, Director 703/306-1670

Teacher and Faculty Development Programs
Tina Straley 703/306-1669

Curriculum and Laboratory Development Programs
Herbert Levitan 703/306-1670

Office for Systemic Reform (OSR)
Thoma Ubois, Deputy Director 703/306-1690

Statewide Systemic Initiative Program (SSI)
Joseph G. Danek 703/306-1682

U.S. DEPARTMENT OF EDUCATION

Office of Educational Research and Improvements (OERI)
400 Maryland Avenue, S.W.
Washington, DC 20202 202/401-3032

Center for Education Statistics
Emerson Elliott 202/219-1828

Office of Postsecondary Education
7th and D Street, S.W.
Washington, DC 20202 202/708-5547

Fund for the Improvement of Postsecondary Education (FIPSE)
Charles Karelis 202/708-5750

Office of Research (Overseas Education Research & Development Centers)
Milton Goldberg 202/653-5019

Education and Society Division
Ivor Pritchard 202/219-2223

Educational Resources Information Center (ERIC)
Robert Stonehill 202/219-2088

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Nevzer Stacey 202/219-2243

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NATIONAL INSTITUTE OF MENTAL HEALTH
Parklawn Building
5600 Fischers Lane
Rocksville, MD 20857 301/443-4513

NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT (NICHD)
Division of Research Grants
Room 240, Westwood Building
5333 Westwood Avenue
Bethesda, MD 20892 301/496-4000

SOCIAL SCIENCES AND HUMANITIES RESEARCH COUNCIL OF CANADA
255 Albert Street
P.O. Box 1610
Ottawa K1P 6G4 613/992-4305

PRIVATE FOUNDATIONS

A number of private foundations have begun to take an increased interest in mathematics and science education. Guidelines are usually available on request and deadlines tend to be rather flexible. Foundations for which we have the names of contact people or information about programmatic emphases are listed first. For details on current programs, write to:

Carnegie Corporation of New York
437 Madison Avenue
New York, NY 10022
Contact person: Ms. Karin Egan, Program Officer
Education and Healthy Devlopment of Children and Youth
Improving Science Education (Subdivision)
212/371-3200, fax 212/754-4073

This division of Carnegie focuses on children from birth to the age of 15 years. In the past they have supported numerous partnerships between universitites and schools.

Exxon Education Foundation
P.O. Box 101
Florham Park, NJ 07932
Contact person: Mr. Mike Dooley, 214/444-1104, fax 214/444-1139

In the area of mathematics education, Exxon focuses on the teaching of mathematics in grades K-3. Since 1988, approximately 50 school districts have received support from the foundation to support improvement efforts in mathematics education at these grade levels. Grants were also awarded in 1990 which supported preservice teacher education in mathematics and mathematics assessment in the primary grades.

Ford Foundation
320 East 43rd Street
New York, NY 10017
Contact person: Dr. Barbara Hatton
Education and Culture Program Division
212/573-5000, fax 212/599-4584

The Ford Foundation is currently giving special attention to projects which address the needs of people living in poverty, including disadvantaged youths in urban and rural settings. A major funded project currently in progress is the QUASAR Project at the University of Pittsburg.

Additional Private Foundation:

Amoco Foundation, Inc.
200 East Randolph Drive
Chicago, IL 60602

Annenberg Foundation
901 East Street, N.W.
Washington, DC 20004
202/783-1036

Apple Education Affairs
(Equipment Grants)
Mailslot 23L20
525 Mariani Avenue
Cupertino, CA 95014

ARCO Foundation
515 South Flower Street
Los Angeles, CA 90071

General Electric Foundation
3135 Easton Turnpike
Fairfield, CT 06431

GTE Foundation
One Stamford Forum
Stamford, CT 06904

Honeywell Foundation
P.O. Box 524
Minneapolis, MN 55440

IBM Corporation
2000 Purchase Street
Purchase, NY 10577
(or local branch office)

John D. & Catherine T. MacArthur Foundation
140 South DearbornStreet
Chicago, IL 60603

James S. McDonnell Foundation
1034 South Brentwood Boulevard
Suite 1610
St. Louis, MO 63166

Rockefeller Foundation
1133 Avenue of the Americas
New York, NY 10036

Sloan Foundation
630 Fifth Avenue
New York, NY 10020

Spencer Foundation
900 North Michigan Avenue,
Suite 2800
Chicago, IL 60611

Xerox Foundation
P.O. Box 1600
Stamford, CT 06904